

WHAT IS CLAIMED IS:

1. A fuel cell apparatus comprising:

a fuel cell connected to a load;

an electricity accumulator connected to said load via a step-up circuit, said electricity accumulator supplying electric power to said load and being charged by regenerative electric power generated at said load and electric power output from said fuel cell; and

a control circuit, wherein, when electric power that said load requires is greater than a predetermined electric power that said fuel cell supplies, said control circuit causes said electricity accumulator to output via said step-up circuit electric power corresponding to a difference between the electric power required by said load and the predetermined electric power, to thereby prevent said fuel cell from supplying electric power greater than the predetermined electric power.

2. A fuel cell apparatus comprising a fuel cell connected to a load, and an electricity accumulation circuit connected in parallel to said fuel cell, wherein said electricity accumulation circuit comprises:

an electricity accumulator;

a step-up circuit for increasing voltage output from said electricity accumulator and for supplying increased voltage to said load;

a charging circuit for supplying electric power output

from said fuel cell to said electricity accumulator so as to charge said electricity accumulator; and

a traveling state detector for detecting a traveling state of a vehicle, wherein

said step-up circuit and said charging circuit are operated selectively in accordance with the traveling state of the vehicle as detected by said traveling state detector, and said step-up circuit is operated in such a manner that said fuel cell outputs electric power within a predetermined range.

3. A fuel cell apparatus comprising a fuel cell connected to a load, an electricity accumulation circuit connected in parallel to said fuel cell, and a diode element for preventing supply of electric power from said load or said electricity accumulation circuit to said fuel cell, wherein said electricity accumulation circuit comprises:

a switching element for charging and a switching element for step-up connected in series;

an electricity accumulator connected in parallel to said switching element for step-up via a reactor; and

a traveling state detector for detecting a traveling state of a vehicle, wherein

said switching element for step-up and said switching element for charging are operated selectively in accordance with the traveling state of the vehicle as detected by said traveling state detector, and said switching element for

step-up is operated in such a manner that said fuel cell outputs electric power within a predetermined range.

4. A fuel cell apparatus according to any one of claims 1 to 3, wherein said load is a drive control unit for a drive motor which drives the vehicle.

5. A fuel cell apparatus according to any one of claims 1 to 4, wherein said fuel cell outputs electricity in such a manner that output voltage does not become lower than the lowest generatable voltage, output current does not exceed the maximum generatable current, and output power does not exceed the maximum output power.

6. A fuel cell apparatus according to any one of claims 1 to 5, wherein said electricity accumulator outputs electricity when the electric power that said load requires exceeds the maximum output power of said fuel cell.

7. A fuel cell apparatus according to any one of claims 1 to 5, wherein said electricity accumulator outputs electricity when output voltage of said fuel cell becomes lower than the lowest generatable voltage, when output current of said fuel cell exceeds the maximum generatable current, or when output power of said fuel cell exceeds the maximum output power.

8. A fuel cell apparatus according to any one of claims 1 to 7, wherein fuel gas is supplied from a fuel storage unit to said fuel cell at constant pressure.

9. A fuel cell apparatus according to any one of claims 1 to 7, wherein said fuel cell apparatus further comprises a fuel supply apparatus for supply fuel gas to said fuel cell, said fuel supply apparatus comprising a fuel storage unit, a supply line extending from said fuel storage unit to said fuel cell, and a valve disposed in said line, wherein said valve is operated in such a manner that the fuel gas is supplied to said fuel cell at constant pressure.

10. A fuel cell apparatus according to claim 8 or 9, wherein the fuel gas is supplied in such a manner that the pressure of the fuel gas becomes constant within grooves of fuel electrodes of said fuel cell.

11. A fuel cell apparatus according any one of claims 8 to 10, wherein said line includes a fuel supply line and a fuel discharge line; a fuel supply solenoid valve is disposed in said fuel supply line; and a fuel discharge solenoid valve is disposed in said fuel discharge line, wherein said fuel supply solenoid valve and said fuel discharge solenoid valve are turned on and off in order to regulate the pressure of the fuel gas.

12. A fuel cell apparatus according any one of claims 8 to 10, wherein a fuel pressure regulation valve is disposed in said line and is operated in order to regulate the pressure of the fuel gas.